

ANNELID TRAILS.

By C. W. De VIS, M.A.

Pl. iii, fig. 2.

SIGNS of the passage across sand or mud of animals low in the scale of organization are, it is well known, of frequent occurrence wherever the older rocks have been sedulously explored. It might naturally have been expected that similar rocks in Queensland would have supplied examples of such "footprints on the sands of time," but I am not aware that in them instances of the kind have hitherto been made known. If only on this account some trails discovered and recognised as such by Mr. Berney may have to the geological mind a certain amount of interest, an amount which will certainly not be lessened by the excellent state of preservation retained by them during so many ages.

They present themselves for examination (happily unapprehensive of the modern ordeal) in two forms on a few square inches of indurated mud, itself coming before us in "questionable shape"—seeing that there is a consensus of opinion that among the multifarious traces of animal life, that have been attributed to the movements of the tubercular bristle feet of Annelids, some, like the present, are doubtless to be credited to that agency, the origin of those under notice may be taken for granted. Of one of them, indeed, a *Nereites*, the generic identity is beyond doubt, and, under the circumstances, I have no hesitation in naming it, in compliment to its discoverer, *Nereites Berneyi*. This trail, the longer of two, consists of the usual double row of markings, the more perfect of them presenting in this case a raised semi-oval buckle-shaped border, enclosing a shallow impression with a minute elevation in the centre. The markings are 2.5 mm. long, set alternately at an angle of 45 degrees to the axis of the trail, which has no median groove; four of them occupy the space of one centimetre, and the double row is 6 mm. broad.

GENUS.—The shorter trail was moulded by a genus unknown to me. It also consists of a double row, but one of close-set

ridgelets, 2 mm. long, raised at an angle of 40 deg. to the mid line, which is marked by a very slender ridge. In this 10 ridgelets cover a centimetre; the double row is 4.5 mm. wide.

The morsel of shale bearing these trails, though much less than half an inch (9.5 mm.) in thickness, is an accumulation of eight distinct strata, whose edges, appearing on a shelving portion of its upper surface, are there manifested by sinuous lines crossing it, and defining the successively diminishing extents of accretion. Over the whole of the outcrops, and over nearly the whole of the upper surface of the slab, can be traced the path of the worm, but not with uniform ease. Until it reaches the edge of the newest layer it is but an impression obscure in its details, and uninformative were it not a guide to the interpretation of trails in a similar condition elsewhere. On the upper surface the terminal third or thereabout of the trail is in a like state of imperfection. The intermediate and characteristic portion was evidently made over mud which was at the moment more ductile under the worm's motile organs. So was it also in the case of the shorter trail, which ensued immediately on the emergence of a worm from mud capable of rising in proof of the fact of a passage across it, for it may be well to point out that the present trails are not casts made by the lower surface of a superincumbent bed, but disturbances of mud actually traversed.

The laminated shale, which in thus recording events in ancient history enormously antedates the clay tablets inscribed by Babylonian hands, is more communicative than its artificial relatives, inasmuch as it informs us of some at least of the conditions under which itself was brought into existence and its story written. The data it hands down point to a muddy shore, on bay, estuary, or wherever else tides ebb and flow under a calm and clear sky. A mud flat, so called, is far from being on a dead level throughout; it has its swellings and its sinkings, and in its hollows, as in rock basins, water is apt to be left by every retreating tide. On one of these ancient shores neap tides brought each its burden of finely levigated silt, and deposited it seaward of that left by the preceding flow. At intervals between tides the water in the depressions of the surface dried up more or less in the heat of the day, and here and there the surface hardened or remained soft as circumstances ruled; worms issued from beneath the watery parts and trailed across the sediment

the trails were laid dry, and indurated sufficiently to enable them to withstand the gentle impact of the next mud-charged tide, which covered them up and hid them away till they were revealed to our senses. If the tale told by this bit of erstwhile mud should appear true to nature, that other truth that the selfsame agents, physical and organic, which do their part in regulating the world we know were actively at work in the incalculable past, will have received one more illustration.

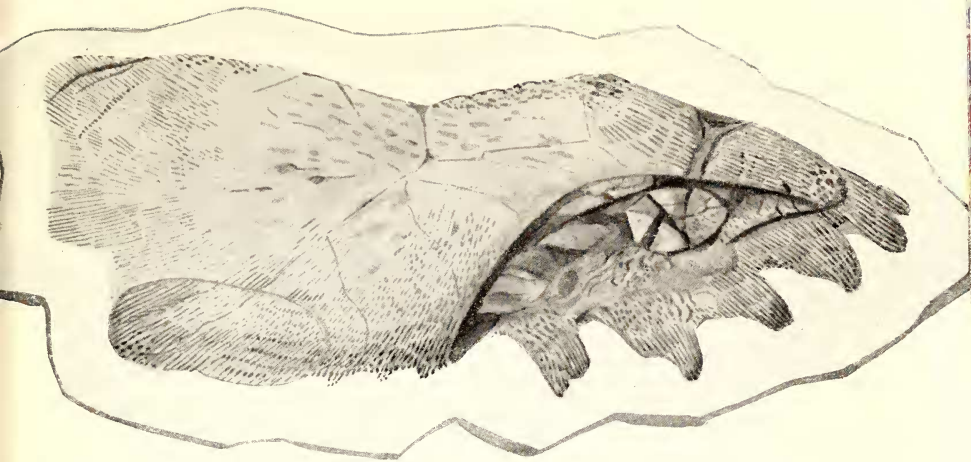


Fig. 1.—NOTOCHELONE COSTATA (Ow.). (Natural Size.)

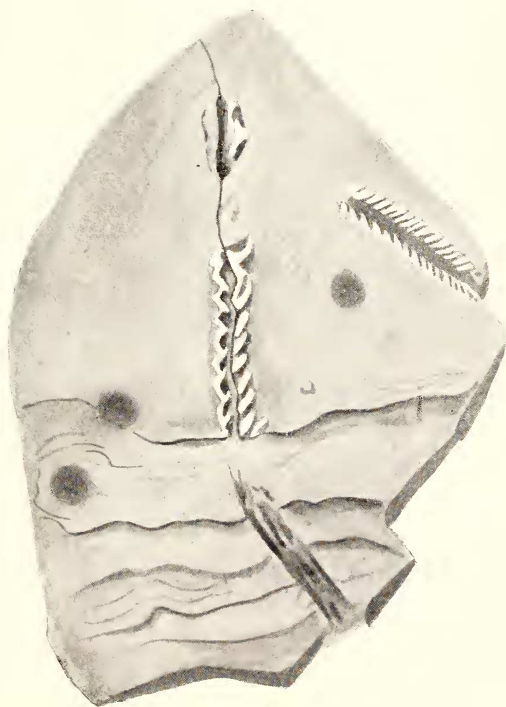


Fig. 2.—ANNELID TRAILS. (Natural Size.)